



## ***Fourth GAIN World Conference***

Paris, France  
June 14-15, 2000

# **Global Information Sharing Systems *Working Group C* *Activities & Products***

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# ***Outline***

- **Participating Organizations**
- **Meetings**
- **Charter**
- **Work Plan**
- **Consolidated Aviation Safety Tools & Links (CASTL) Web-Site**
- **Airline Safety Event Sharing System Prototypes**



## ***Participating Organizations***

- Abacus Technology Corp.
- Aer Lingus
- Airbus Industrie
- Aircraft Engineers International
- AvSoft, Ltd.
- FAA
- ICAO
- Japanese Association of Air Transport Engineering & Research
- NASA Ames
- Oak Ridge National Laboratory
- SITA
- Transport Canada
- Transportation Safety Board of Canada
- Trans World Airlines
- University of California at Berkeley
- DOT/Volpe Transportation Systems Center
- xwave solutions



# ***Meetings***

<b><u>Date</u></b>	<b><u>Location</u></b>	<b><u>Hosts</u></b>
<b>Mar 99</b>	<b>Washington, DC</b>	<b>FAA</b>
<b>Jun 99</b>	<b>Ottawa</b>	<b>Transport Canada</b>
<b>Sep 99</b>	<b>St. Louis, Mo.</b>	<b>TWA</b>
<b>Nov 99</b>	<b>Paris</b>	<b>Air France, BEA, DGAC</b>
<b>Jan 00</b>	<b>Washington, DC</b>	<b>FAA</b>
<b>Mar 00</b>	<b>Montreal</b>	<b>Transport Canada</b>
<b>May 00</b>	<b>Washington, DC</b>	<b>FAA</b>



## ***Charter***

- **Develop prototypes to begin global sharing of aviation safety information. Prototypes could include capabilities to:**
  - **Share safety incident/event reports in near-real time among airline safety managers**
  - **Provide sharing library of “published” safety information**
  - **Effectively disseminate throughout aviation community, safety information that is “publicly” available**



# ***Charter***

- **Highest Priority Items**
  - **Develop a near-real time system to share safety incident/event reports derived from internal safety information reporting systems**
  - **Develop an aviation safety Internet site to encourage use of existing “public” information/data sources**



# ***Charter***

- **Other tasks to consider:**
  - **Develop sharing library containing safety information “published” by airlines and other aviation organizations**
  - **Publish benefits gained from information sharing using the prototypes (success stories) to encourage participation in GAIN-like activities**
  - **Utilize lessons learned from the prototypes to support potential expansion of the sharing prototypes to other aviation safety information users and providers**



## ***Work Plan***

### ***(Airline Safety Event Sharing Systems)***

- **Survey 15-20 airline safety managers to develop standardized safety event report for sharing**
- **Based on survey propose a “standard sharing report” for use by airlines participating in prototype demonstrations**
- **Solicit airline safety managers to participate in demonstrating prototype systems**





# ***Work Plan***

## ***(Airline Safety Event Sharing Systems)***

- **Prepare work plan describing the development, implementation and demonstration of prototype sharing systems**
- **Develop, implement and demonstrate two prototype systems and propose an approach for exchanging “standard sharing reports” between systems**



## ***Work Plan*** ***(CASTL Web-Site)***

- **Create inventory of aviation safety databases and information around the world that are “publicly” available**
- **Develop broad categories and descriptions of the sources and types of databases and information**
- **Establish links to selected safety data and information sources from the CASTL Web-Site**



## ***Work Plan*** ***(CASTL Web-Site)***

- **Assign keywords to each link to aid user in finding appropriate safety data/information**
- **Target site to “aviation safety professionals” and implement password protection**
- **Add information on analytical methods and tools from GAIN Working Group B**
- **Implement “free text” search capability by indexing linked sources**



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# ***Consolidated Aviation Safety Tools & Links (CASTL) Web-Site***



# ***Overview***



- **Developed by TSB of Canada and WG C to:**
  - Encourage use of existing “public” safety information and data available on the web
  - Raise awareness of methods and tools to analyze safety information and data
- **Content of Web-Site**
  - An inventory of about 100 web-sites worldwide that are categorized to facilitate ease of navigation
  - One-page summaries of about 60 analytical methods and tools potentially useful to airline flight safety offices



## ***Status***

- **Made available to aviation safety professionals that can improve safety in May '00**
- **Comments received so far have been very positive**
- **Expect more feedback from the conference**





# CASTL

## *Consolidated Aviation Safety Tools & Links*

**CASTL is a prototype site developed under the Global Aviation Information Network (GAIN) program to facilitate the use of existing aviation safety information. The site provides links to data and information from around the world and describes a variety of analytical methods and tools that can be used to analyze different types of safety data.**

### Browse

[Data/Information](#)

Browse links to aviation safety data/information according to categories.

[Methods & Tools](#)

Browse links to methods/tools related to safety analysis according to categories.

### Search

[Data by Keyword](#)

Search links to sources of aviation safety data by pre-defined keywords.

[By Full Text](#)

Search full text of designated web sites.

### User Feedback

[Send Comments](#)

Provide your comments to help improve this prototype site.

### Nominate

[New Source](#)

Procedure for suggesting a new link / site / contact for data or methods & tools.

### About

[GAIN](#)

Scope and objectives of the GAIN project.


[This Site](#)

Statement of Purpose for this Website.

*CASTL version 1.2  
April 21, 2000*

*Best Viewed in  
Netscape 4.X and IE 4.X*





## Browse

[Data/Information](#)

[Methods & Tools](#)

## Search

[Data by Keyword](#)

[By Full Text](#)

## User Feedback

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## Nominate

[New Source](#)

## About

[GAIN](#)

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[Aircraft - Commercial](#) | [General Aviation](#) | [Military Aviation](#) | [Aviation Safety Topics](#) | [Aviation Events](#) | [Air Traffic Control](#) | [Aviation Organizations and Safety Initiatives](#) | [Aviation Safety-Related Research](#) | [Additional Aviation Safety-Related Information](#)

- [Aircraft - Commercial](#)
- [General Aviation](#)
- [Military Aviation](#)
- [Aviation Safety Topics](#)
  - [Aircraft system/component reliability/performance](#)
  - [Avionics](#)
  - [Cabin Safety](#)
  - [Flight Simulation](#)
  - [Human Factors](#)
  - [Maintenance\(service difficulty reports, airworthiness directives\)](#)
  - [Other](#)
  - [Pilot-related Information](#)
  - [Training](#)
  - [Weather](#)
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- [Air Traffic Control](#)
- [Aviation Organizations and Safety Initiatives](#)
- [Aviation Safety-Related Research](#)
- [Additional Aviation Safety-Related Information](#)

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# CASTL

## Data/Information Links

### Browse

- Data/Information
- Methods & Tools

### Search

- Data by Keyword
- By Full Text

### User Feedback

- Send Comments

### Nominate

- New Source


### About

- GAIN
- This Site

**Category:**Aviation Safety Topics  
**Sub-category:**Human Factors

- [Aviation Medical Society - New Zealand](#)  
This site is the New Zealand website for the Aviation Medical Society of Australia and New Zealand (AMSANZ). Safety-related information includes an on-line copy of the Society's magazine, AvMedia, which contains various abstract reports on medical issues that effect pilots. *English*
- [Georgia Tech's Center for Human-Machine Systems Research](#)  
This group studies how humans interact with complex systems in such areas as human supervisory control and human-centered automation in complex engineering domains. The site lists research software and different research projects as well as publications and facilities. *English*
- [NATS Research and Development Group](#)  
Includes Safety Research, Human Factors, and other information such as predominantly ATM/ATS information (research, analysis, evaluation, development, etc.). *English*
- [Netherlands \(NLR\) Free Flight Studies and Simulations](#)  
This site contains an overview of the studies within the Netherlands National Lucht - en Ruimtevaartlaboratorium or National Aerospace Laboratory (NLR) IFree Flight with Airborne SeparationI project. It also contains links to pages describing the studies and simulations in more detail. *English*
- [The Nigels Aviation Safety Page](#)





## Browse

[Data/Information](#)

[Methods & Tools](#)

## Search

[Data by Keyword](#)

[By Full Text](#)

## User Feedback

[Send Comments](#)

## Nominate

[New Source](#)

## About

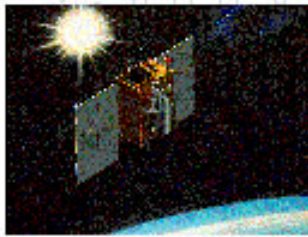
[GAIN](#)

[This Site](#)

# Center for Human-Machine Systems Research

[Research](#) | [Education](#) | [Domains](#) | [Sponsors](#) | [People](#) | [Facilities](#) | [Affiliations](#) | [Publications](#)

The Center for Human-Machine Systems Research (CHMSR) was founded in 1981 for the purpose of studying how humans interact with complex systems. At CHMSR, an interdisciplinary group of faculty and students with backgrounds in engineering, computer science, and behavioral and social sciences pursue research in analysis, modeling, and design of human-machine systems. We use and/or develop techniques and methodologies based on systems engineering, artificial intelligence, cognitive sciences, psychology, mathematical and computational modeling, and empirical evaluations.




We perform research in human supervisory control and human-centered automation in complex engineering domains such as aircraft flight decks, information systems, communication networks, computer integrated manufacturing systems, power plants, and space command and control systems. We study perceptual and cognitive processes and attempt to identify the factors that affect system operation, decision making, diagnostic problem solving, and maintenance. We develop theories and models of human operator activities and functions, as well as their environments, and formulate principles for the design of interactive interfaces. Based on the theories and models, we design and evaluate display systems, intelligent decision aids, tutoring and training systems, and in teractive learning environments.

The human-machine systems engineering program at [Georgia Tech](#) is distinguished by the fact that no comparable academic unit exists, in the U.S. or elsewhere, where a large number of faculty and students are focused on such issues. The Center is part of the [School of Industrial and Systems Engineering](#) at the Georgia Institute of Technology, the preeminent technological university in the Southern United States. The School, [ranked at](#)







# CASTL

## Full Text Search

### Browse

Data/Information

Methods & Tools

### Search

Data by Keyword

By Full Text

### User Feedback

Send Comments

### Nominate

New Source

### About

GAIN

This Site

Search full text of designated web sites.


**Under Construction!**


This search feature has been activated only on a small percentage of the web sites on CASTL.  
It is presented as an example of a feature that could be added to CASTL at a later date.

any language ▾

Search

[Help](#)

Powered by  




## Browse

- Data/Information
- Methods & Tools

## Search

- Data by Keyword
- By Full Text

## User Feedback

- Send Comments

## Nominate

- New Source

## About

- GAIN
- This Site

Search for documents in any language

[Help](#)

**134 Web pages found.**

- [CHI98LA351](#)**

NTSB Identification: CHI98LA351. The docket is stored in the (offline) NTSB Imaging System. Scheduled 14 CFR 121 operation of AMERICAN EAGLE, INC. (D.B.A..

**URL:** <http://www.nts.gov/Aviation/CHI/98A351.htm>

Last modified 13-Feb-2000 - page size 1K - score 4084 - in English
- [EUCAREVIEW 7](#)**

EUCAREVIEW 7. 2. Jahrgang November 1995. In dieser Ausgabe: Editorial Comments: Enteisen oder nicht Enteisen Incidents Um Ihre Meinung wird gebeten...


**URL:** <http://www.eucare.de/ecview7.htm>

Last modified 10-Nov-1997 - page size 50K - score 4006 - in German
- [Flight Safety Foundation Press Release 98-09 EASS 98 Review](#)**

Aviation safety news: More than 200 aviation professionals from 43 countries attended the Flight Safety Foundation (FSF) 10th annual European Aviation

**URL:** [http://www.flightsafety.org/news\\_release/pr98\\_09.html](http://www.flightsafety.org/news_release/pr98_09.html)

Last modified 16-Feb-2000 - page size 29K - score 2798 - in English



Browse

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New Source

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CASTL

Nomination Process

Nominate a new source of data to be added to CASTL.

Please provide the web-site addresses for direct "point and click" connection to their sources as available (where web site access is not available, provide contact information).

URL:

TITLE:

SUB-CATEGORY:

If internet address is not available leave this box empty and provide point of contact in Description.

Hold down CTRL key for selecting multiple SUB-CATEGORIES

Aircraft - Commercial

Aircraft Manufacturers (Boeing, McDonnell Douglas, Airbus)

Aircraft -specific information

DESCRIPTION:

KEYWORD(S):

Hold down CTRL key for selecting multiple KEYWORDS

Aerial Work

Aerodrome/Airports

Air Proximity

LANGUAGE:


Dutch

English

French

ORIGIN OF THE





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User Feedback

User Feedback on GAIN's Consolidated Aviation Safety Tools and Links (CASTL) Web Site

1. What type of organization do you represent?

☐ Airline

☐ Manufacturer (airframe, avionics, etc.)

☐ Military aviation

☐ Trade Association/Employee Group

☐ Government agency

☐ Research group (university, etc.)

☐ Other

2. When you visited the site today, were you:

☐ Searching for specific information

☐ Browsing the site

3. If you were searching for specific information,

What was it?

Did CASTL help you find it?

What feedback can you give us based on your experience with this search?





## ***Proposed Next Steps***

- **Add information on existing safety information sharing initiatives to CASTL**
- **Add more links and functionality to CASTL**
- **Continue to validate usefulness and usability of CASTL**



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# ***Airline Safety Event Sharing System Prototypes***



## ***Related Initiatives***

- **ICAO/CAST Common Taxonomy Working Group**
  - **Formed in Fall '98 to develop common terms, definitions, and taxonomies for aviation accident/incident reporting systems**
  - **Formed an International Aviation Data Registry sub-team in early '99 to develop an internationally accessible directory of standards pertaining to aviation data**



## ***Related Initiatives***

- **ICAO AIG '99 recommended that States should:**
  - **Promote establishment of safety information sharing networks among all users of aviation systems**
  - **Facilitate the free exchange of information on actual and potential safety deficiencies**

### ***Added This Note***

***“Standardized definitions, taxonomies and formats are needed to facilitate data exchange”***



# ***Current Sharing of Safety Events***

- **Sharing of specific safety events between individual airlines**
  - *Telephone/e-mail*
  - *Safety meetings*
- **Periodic sharing of compilation of de-identified safety events**
  - *British Airways Safety Information System (BASIS)/ Safety Information Exchange (SIE)*
  - *IATA - Safety Trend Evaluation, Analysis, and Data Exchange System (STEADES)*
  - *ATA Aviation Safety Evaluation System (AASES)*



# ***Proposed Safety Event Sharing***

- **General Concept**
  - Airline safety managers can view information on *specific* safety events provided by other airlines and/or query other airlines to obtain information
  - Information is provided in near-real time and from a much larger population than is currently possible
  - Uses standardized format to facilitate ease of understanding
  - Ability to contact information source if more information on an event is desired



# ***Survey of Airline Flight Safety Managers***

- **Purpose**
  - To better understand the most desirable features and characteristics of a near-real time global safety information sharing system for airline safety managers
  - To determine what information is needed for a standard sharing report (SSR) that will be used by sharing system participants



# ***Survey of Airline Flight Safety Managers***

- **Airlines surveyed**

- Air New Zealand
- All Nippon Airways
- British Airways
- Continental Airlines
- Japan Air Lines
- Japan Air Systems
- Qantas Airlines
- Saudi Arabian Airlines
- Southwest Airlines
- Trans World Airlines





# ***Proposed Standard Sharing Report (SSR) Format***

- **Event date (YYYY/MM)**
- **Aircraft identification\***
  - *Aircraft Manufacturer*
  - *Model*
  - *Master series*
  - *Engine Manufacturer*
- **Event Category\* (a few words)**
- **Event Description (one or two sentences)**
- **Equipment/System involved (ATA Code)**

*\*Will follow the latest ICAO/CAST common taxonomy*



## ***Proposed Standard Sharing Report (SSR) Format***

- **Phase of flight\*** (if pertinent)
- **Airport location** (if pertinent)
  - *ICAO identifier*
  - *3-letter identifier*
- **Weather condition** (if pertinent)
- **Probable cause**
- **Corrective action** (recommended or known)
- **Brief Narrative**

*\*Will follow the latest ICAO/CAST common taxonomy*



## ***Status***

- **Two prototype sharing systems have been developed by AvSoft, Ltd. and xwave solutions**
- **“AvSoft system” is now operating at Aer Lingus, LanChile and British Midland**
- **“xwave system” will be installed at Canada 3000 and another airline to be named**



## ***Panel on “Airline Safety Event Sharing System Demonstrations”***

- **Airline Requirements**
  - Tom Curran, Aer Lingus
- **Technical Approaches**
  - Tim Fuller, AvSoft, Ltd.
  - Robert Aube, xwave solutions
- **Operational Demonstration**
  - Bill Wood, DOT/VNTSC



## ***Proposed Next Steps***

- **Complete operational demonstration of the AvSoft and xwave prototype sharing systems**
- **Add more airlines to the prototype systems**
- **Publish benefits gained from using prototype systems to encourage greater participation**
  - **Participate in Working Group A regional workshops**



## ***Proposed Next Steps***

- **Demonstrate interoperability of the AvSoft and xwave systems**
- **Continue to validate usefulness and usability of the prototype systems**



**Tomorrow morning at 10:30**

**Implementation Workshop on  
Sharing System Prototypes**

***Live Demonstrations of CASTL  
and  
Airline Safety Event  
Sharing System Prototypes***